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- Guidance Case Studies Using Data Processing
- Self-Conceptualization in High School Students
- Sex-Differences in Problem Solving
- School Psychologists and Electronic Data Processing
- In-Service Education Needs of New Teachers

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THE EDITORS SAY:

Quest for Educational Innovation

Henry Osibov

Today a grim race between a civilized future and the prevailing hostility among nations threatens the extermination of mankind. The civilized future's hope is to hold in abeyance the forces of violence until mankind develops less antagonistic creeds.

In the realm of materialism, increased use of information and scientific invention has triggered unprecedented change and improvements in our technology. These technological advances produce abundantly to fulfill the material needs of man.

Though the fruits of research have made it possible for man to master nature, monumental changes must be wrought in the psychological and social aspects of human association if the conquest of nature is to benefit mankind. Ill advised creeds of men and deep rooted institutions interfere and deny the fruits of our improved technology to many. Indeed, the mechanics of distributing resources to all now dwarf the problems of producing enough.

So long as our potential is locked within feudalistic fears, our hard-bought tools tarnish from disuse, and much of mankind continues to exist in misery and deprivation. The existence of monumental possibilities and this undistributed abundance is not enough, because the barriers of conformity are high and dangerous. They were built and are maintained by those whose might is consequent upon conformity to what-is.

Without advances on the frontier of human attitudes, we can never expect to reap the benefits of our bounteous information and improved technology. Furthermore, inner discords of men make a mockery of material advances. Note that the African believes his ills and misery will disappear if he can only be rid of European colonialism. Communism proclaims the millenium will be achieved when capitalism is eradicated, and we of the Western Bloc champion an ideology that can imagine nothing that equals the evils of communism.

These inner discords of men are subject to revision in the light of new

(Continued on page 223)

Dr. Henry Osibov, Director of Research, Oregon Education Association, has done extensive writing in the field of education. After serving as school administrator and doing teaching and guidance work in Oregon schools, Dr. Osibov served as Assistant to the Director, Bureau of Educational Research, School of Education, University of Oregon. He obtained his Ed.D. degree at the University of Oregon in 1961.

The Analysis Of Guidance Case Studies Using Data Processing Procedures

JACK M. THOMPSON

A major portion of the school psychologist's time is spent with individual students. In attempting to analyze individual case studies there are certain underlying commonalities which are or can be easily qualified. Personal data such as age, grade in school, occupational and educational level of parents, number of siblings, etc., can be readily tabulated. However, the type of case and the service rendered may vary widely from one individual to the next as may the use of psychometric instruments and involvement of other school personnel in determining a course of action. Yet, these factors are probably of greater value than the easily quantifiable descriptive statistics which are more commonly reported.

If there were a way to standardize judgment in the more subjective areas, important information would be readily accessible. The type of coding procedures offered in data processing methods proves attractive in attempting to categorize some of these usually less quantifiable areas.

Members of the Guidance Department of the Sonoma County Superintendent of Schools, Sonoma County, California, felt that there was no simple means for collecting and analyzing many important variables related to individual case studies. Without these data the department was limited in discussion of important aspects of its function. Out of this grew the development of a check list and a method for processing the data using IBM punch card procedures. The check list was developed in a series of departmental meetings.

The individuals contributing to this paper are *Jack M. Thompson*, Director of Guidance; *Carmen J. Finley*, Director of Research; *Joseph Baldwin, Albert Cognata, Reuel Fick* and *Reba Sones*, Guidance Consultants, Office of the County Superintendent of Schools; and *Robert Sones*, Psychologist, Santa Rosa City Schools.

Appreciation is expressed to Dr. DeForest Hamilton, Superintendent of Schools, and Charles R. Robinson, Assistant Superintendent of Curricular Services, Sonoma County, California, for their support and encouragement in the development of this project.

If the data processing of individual studies proved feasible five major outcomes were expected:

a. Services performed could be more thoroughly and quickly analyzed.
b. The analyzed data could be used as an in-service method for improving the functioning of the department.
c. The information could be used to indicate possible areas of need for in-service training with other school personnel.
d. The data collected could be used for research projects.
e. The accumulation of data over a period of time would provide material for longitudinal studies.

Method

Nine areas of interest were defined: a) status of case (new, reactivated, follow-up, etc.); b) referral source; c) examiner; d) problem (both reason for referral and diagnosis); e) services performed (psychometrics, conferences, etc.); f) estimate of child's adjustment; g) disposition of case; h) prognosis; and i) follow-up.

Within each area, categorical responses were developed in check list form and a partial sample of the results are shown in Figure 1.[1] An IBM card form was then developed eo accommodate the check list.

One of the major problems was that of multiple checking within categories. This presented some technical problems from the data processing point of view. More important, it was recognized that some workers would characteristically check more freely than others. The problem was to allow enough freedom so that the case could be adequately recorded. There were some misgivings as to how fine a judgment could be made when no limit was placed on the number of checks within a category.

It was decided that the system should be tried on a pilot basis for three months. At the end of that tme, the data would be summarized, the system evaluated, and modifications made as needed.

Some of the categories, as indicated in Figure 1 are fairly objective and easily checked by the school psychologists. However, other categories are highly subjective and mainly based upon clinical inference. An example of this is in diagnosis, where it could be expected that the main identifiable problem might vary from one worker to another. Other obviously subjective areas are the estimate of the individual's adjustment and the prognosis for change. Even though the subjectivity of these categories was recognized, it was felt that the areas needed to be included in order to provide the type of analysis desired.

[1]A copy of the complete form for both Figures 1 and 2 can be obtained by writing Jack M. Thompson, Director of Guidance, Sonoma County Schools.

Results and Discussion

During the three month period four guidance workers used the check list, completing the form after final disposition of the case. One hundred forty-one cases were included. At the end of this period, distributions were prepared on each of the nine areas plus distributions by school district, grade level, sex and IQ score.

After these results were made available, the check list was revised and a new form was developed as shown partially in Figure 2.

The check list was expanded to obtain a more thorough analysis. The biographical data section was changed to include occupational and educational level of parents, marital status, number of siblings and other related information. This was done mainly in anticipation of the possibilities for research studies. The category, "source of referral," was expanded to include more specific sources such as curriculum consulant, school administrator, teacher, counselor, nurse, speech therapist and psychologist.

The "problem" category was arranged in more logical order with some adjustments in the descriptive categories. The "disposition" category was also expanded to include more specifics, particularly in the area having to do with remedial action within the school.

Even these changes made it impossible to include all the possibilities one might desire. However, the check list had to be limited from both a practical and logical viewpoint. If further refinements were necessary, they could be obtained by pooling the cards in certain areas, i.e., under curriculum adjustment in the disposition category, one could list specific curriculum recommendations. The most important thing was to obtain the original data and assemble it in a logical picture. The IBM card form was extended to three cards in order to accommodate the new changes.

The problem of multiple checks in certain categories was handled by limiting the number of checks to three. This was arbitrary and it was recognized that there would be certain cases where more than this number would be justified; however, it was felt that there was more to be gained in attempting to limit the number of discriminations required among guidance workers.

Certain categories were ambiguous. A brochure of instructions was developed by the guidance consultants in order to promote common agreement as to the meaning of the categories.

The entire case study is not being reduced to check list form. Previous reporting methods (narrative case histories) continue and the entire cumulative file on any child is always available. The check list is merely an added feature which makes certain facts and judgments more readily available.

Summary, Implications and Plans for the Future

A method to evaluate the effectiveness of school psychologists in dealing with individual students has been developed. A pilot study suggested certain

modifications. The method to this date has been enthusiastically received by the school psychologists who have used it and plans are to continue for the current school year. At the end of that time, the data will again be analyzed and modifications made as needed.

If this approach proves satisfactory, it can be of value to school psychologists and other professional people as an aid in analyzing their work. Too often professional workers make decisions regarding their operation on a subjective basis. The use of data processing procedures may help to overcome this problem.

FIGURE 1

Guidance Case Summary (Partial Sample)

Name_____ Sex_____ Birthdate_____
School_____ Grade_____ Date of Service_____

Mental Age Scales
M.A. _____
I.Q. _____

Deviation Scales
Verbal _____
Performance _____
Full Scale _____

I STATUS
_____(1) New—1st Contact

II REFERRAL SOURCE (Check one only)
_____(1) Home
_____(2) Mental Hygiene Clinic

III EXAMINER
_____(Examiner's name)

IV PROBLEM

Referral	Diagnosis
_____(1) Acceleration	(1)_____

V SERVICES

A. Ability Measurement
_____(1) Arthur
_____(2) Binet, Form L

B. Achievement Measurement
_____(1) Durrell Sullivan
_____(2) Gates Reading

C. Personality Assessment
_____(1) Bender
_____(2) CAT

D. Conferences & Observation
_____(1) Child Interview
_____(2) Child-observation

VI ADJUSTMENT ESTIMATE

Self	To School
_____(1) Normal	(1)_____
_____(2) Mild	(2)_____

VII DISPOSITION

Recommendation	Approach
_____(1) Acceleration	_____(1) Administrator's Conference
_____(2) Exclusion	_____(2) Case Conference

VIII PROGNOSIS
_____(1) Definite positive change
_____(2) Mild positive change

IX FOLLOW-UP APPRAISAL

FIGURE 2

Guidance Case Summary (Partial Sample)

(1:1-6)_____
Student No.
Name (1:7-25)_____ C. A. (1:26-29)_____ Sex (1:30)_____
Birthdate (1:31-36)_____ School (1:37-40)_____
Grade (1:41-42)_____ Date of Service (1:43-46)_____ Teacher (1:47-52)_____
Father's Occupation (1:53)_____ Mother's Occupation (1:45)_____
Father's Education (1:55)_____ Mother's Education (1:56)_____
Marital Status (1:57)_____
No. of Siblings (1:58)_____ Position Within Family (1:59)_____
Both Parents Working (1:60)_____ Foster Home (1:61)_____

Mental Age Scales		Deviation Scales	
(1:62-65)	M.A. _____	(1:69-71)	Verbal _____
(1:66-68)	I.Q. _____	(1:72-74)	Performance _____
		(1:75-77)	Full Scale_____

I STATUS (1:78)
_____(1) New—1st contact
_____(2) New—subsequent contact

II REFERRAL SOURCE (Check one only) (1:79-80)
_____(1) Home
_____(2) Mental Hygiene Clinic

III PROBLEM (limit to three checks on each side)

Referral	Diagnosis
_____(2:7) Very Superior (130 & above)	(2:38)_____

IV SERVICES

A. Ability Measurement	C. Personality Assessment
_____(2:69) Binet, L. M.	_____ (3.7) Bender
B. Achievement Measurement	**D. Conference**
_____(2:78) Wide Range	_____(3.21) Parent

V ADJUSTMENT ESTIMATE

Self (3:36)	To School (3:37)
_____(1) Normal	(1)_____
_____(2) Mild	(2)_____

VI DISPOSITION

Recommendation (limit to 3 checks)	Approach
_____(3:38) Acceleration	_____(3:67) Administrator Conference

VII PROGNOSIS (Mandatory for all cases) (3:78)
_____(1) Definite positive change
_____(2) Mild positive change

VIII FOLLOW-UP APPRAISAL OF CHANGE (4:79)
_____(1) Definite positive change
_____(2) Mild positive change

IX EXAMINER (3:80)

_____(Examiner's name)

Factors Associated with Levels of Self-Conceptualization In High School Students

WILBUR C. WASHBURN

A vital function of today's school is to provide opportunities for students to learn mature self-concepts, which are necessary for adequate adjustment to the spiraling complexity of our social environment. The aim of this study is to provide the counselor, the teacher, and the school psychologist with a more adequate picture of the structure of self-concepts in students and of presumed antecedent factors related to these self-patterns.

The Problem and Approach

Two basic questions were involved: (1) *How can patterns of self-concepts be measured?* (2) *What factors are related to differences in patterns of self-concepts?*

The first problem involved construction of a reliable and valid testing instrument to measure self-concepts. Erikson (2), Freud (3), Fromm (5), Horney (6), and Sarbin (7) postulated patterns of self-concepts with origins in infancy, childhood, and adolescence. Test items were constructed representing the self-patterns described by these theorists, and the items were intercorrelated. The result was six patterns of self-concepts, which were then ranked on the basis of probable level of maturity by a group of graduate students in counseling psychology. The self-levels, listed in rank-order from least to greatest maturity, were:

S_1 *Somatic-Primitive Self* (involving concern with immediate need gratification);

S_2 *Submissive-Dependent Self* (involving avoidance of disapproval by giving in to others);

S_3 *Detached-Independent Self* (involving separation from others and fear of emotional involvement with other persons);

S_4 *Outer-Controlling Self* (involving manipulation of the external environment to attain approval as symbolized by social status);

S_5 *Inner-Controlled Self* (involving internalization of social norms which provide attitudes functioning to control behavior);

S_6 *Integrative-Actualizing Self* (involving acceptance of oneself and others and orientation toward self-fulfillment).

Wilbur C. Washburn at the present time is a student at the University of California, Berkeley, working for his Ed.D. degree. He has had two years' secondary teaching experience in the Richmond schools and obtained his M.A. degree in 1959 at the University of California, Berkeley.

Each self-level had a negative correlation of –.70 or more with another self-level. Thus the Inner-Controlled Self correlated negatively with the Somatic-Primitive Self, the Onter-Controlling Self with the Submissive-Dependent Self, and the Integrative-Actualizing Self with the Detached-Independent Self. These negatively correlated self-patterns were combined as alternative choices in forced-choice items. Although the correlations were independent of maturity ratings, each more mature level had a negatively correlated less mature counterpart. Reliability for the forced-choice tests were in the high .80's and low .90's for the various grade levels. Validity was checked and cross-checked by comparing means for contrasting groups selected by school counselors on the basis of a checklist describing characteristics of the self-levels. The average difference between means for "high" and "low" groups was 9.78 and critical ratios ranged from 8.49 to 9.65.

The second problem involved deciding which factors were presumed to be determinants of self-concepts and selecting groups representing these factors. A survey of the literature dealing with personality development indicated at least three factors were consistently stated as probable antecedent conditions: (1) *temperamental characteristics (personality traits present at birth and presumably having a physical or structural basis);* (2) *basic parent-child relationships (acceptance, protection, and regulation);* and (3) *ascribed social roles (statuses required of all persons without choice).* All groups were selected from 346 high school students available for the study.

Developmental studies—Sherman, Sherman, and Flory (8) and Fries and Lewi (4)—suggest there are two significant temperamental variables: (1) differences in *activity level* and (2) differences in *emotionality* as inferred from responses to situations involving thwarting of motives. Since original temperamental traits have probably been modified by learning in adolescent subjects, all ratings of temperament are estimates of temperament as it has been modified by experience. Each subject was rated in his home room class on the basis of a seven point scale. **The rating scale measuring activity level presented these choices:** (1) *always active;* (2) *usually active;* (3) *often active;* (4) *sometimes active;* (5) *frequently inactive;* (6) *usually inactive;* and (7) *always inactive.* The same scale was used to appraise emotionality, except that the words "emotional" and "unemotional" were inserted in place of "active" and "inactive." Home room teachers also rated subjects on the same scale. Subjects were separated into groups with mean peer ratings one standard deviation above and below the mean. Subjects with teacher ratings at the opposite end of the scale from average peer ratings were eliminated. Mean scores on the subtests measuring the self-levels were then computed for the "extreme groups." For each "extreme group" separate means were computed for males and females.

Parent-child relationships were appraised by means of three-choice rating scales, and 212 high school seniors were asked to rate their mothers and fathers separately with regard to (1) *strictness*, (2) *protectiveness*, and (3) *tendency to criticize*. For example, the rating scale for fathers regarding protectiveness contained these alternatives: (A) "My father is less concerned with my health and safety than most fathers." (B) "He is about as concerned as most fathers." (C) "He is more concerned than most fathers." Subjects were grouped on the basis of which choice they checked. Counselors verified the ratings on the basis of their knowledge of or contact with the parent being rated. If the counselors had no knowledge of the parent or counselor-ratings conflicted with the subject's self-ratings, the subject was removed from the group. Males and females were not separated in order to maintain a minimum of 30 subjects in each group.

Social roles were classified into five ascribed or required positions: (1) *age*, (2) *sex*, (3) *socio-economic status*, (4) *position in the family*, and (5) *race*. Socio-economic status was regarded as an ascribed position for teen-agers, since the adolescent generally has no control over the socio-economic stratum into which his family falls. Subjects were classified into three socio-economic groups on the basis of father's occupation in terms of the scale devised by Beckman (1934). The only racial group available in sufficient numbers to warrant comparison with the large Caucasian group was a group of 45 Negroes, who were matched with the Caucasian group for age, sex, and socio-economic status. A group of high school seniors was compared with a group of tenth graders as a basis for assessing age differences in relation to self-level.

Results of the Study

Table I summarizes the statistically significant differences in self-levels for ratings of temperament. Males rated as having a higher activity level scored lower than those with low activity ratings on the subtest measuring the Inner-Controlled self (and consequently higher on the subtest measuring the Somatic-Primitive Self). The difference was significant at almost the .02 level of confidence. Similar results were not obtained for female subjects. Females rated high in activity level also tended to score higher than those with low activity ratings on the subtest measuring the Integrative-Actualizing Self (and lower on the negatively correlated Detached-Independent Self).

No statistically significant differences were found for females in relation to ratings of emotionality. However, males rated low in emotiionality scored higher than those with high emotionality ratings on the subtest measuring the Inner-Controlled Self (and correspondingly lower on the negatively correlated Somatic-Primitive Self). Males rated low in emotionality scored higher than those with high emotionality rating on the subtest measuring the Integrative-Actualizing Self (and lower on the negatively correlated

Detached-Independent Self). These differences were significant at less than the .01 level of confidence.

Only the Integrative-Actualizing Self (and its negatively correlated counterpart, the Detached-Independent Self) was found to be related to the way these adolescents perceived their parents. The statistically significant results, summarized in Table II, show that a tendency of parents to be strict or critical or of only the mother (and not the father) to be protective is related to low scores on the subtest measuring the Integrative-Actualizing Self (and high scores for the Detached-Independent Self). These differences were significant at less than the .01 level of confidence.

TABLE I

Differences in Self-Level Related to Ratings of Temperamental Traits

(1) *Groups Rated on the Basis of Temperamental Traits*	(2) *N*	(3) *Self-Level*	(4) *Mean**	(5) *Difference*	(6) *Critical Ratio***
"High" Activity (Males)	54	S_7-S_1	23.11		
"Low" Activity (Males)	87		25.85	2.74	2.32
"High" Activity (Females)	62	S_7-S_3	27.80	2.76	3.36
"Low" Activity (Females)	112		25.04		
"High" Emotionality (Males)	36	S_7-S_1	22.00	3.78	3.02
"Low" Emotionality (Males)	104		25.78		
"High" Emotionality (Males)	36	S_7-S_3	20.00	4.50	4.20
"Low" Emotionality (Males)	104		24.50		

*The mean is for the first of the pair of negatively correlated self-levels indicated in Column (3). The mean would be in the opposite direction for the second self-level of the negatively correlated pair.

**If C.R. = 2.00, P = .05; If C.R. = 2.33, P = .02; If C.R. = 2.58, P = .01.

TABLE II

Scores on the Subtest Measuring the Integrative-Actualizing Self* in Relation to Ratings of Parents

Ratings of Parents	*N*	*Mean*	*Difference*	*Critical Ratio***
Both Parents Strict	38	22.81		
Neither Parent Strict	117	25.83	3.02	2.62
Only Mother Protective	50	22.04		
Both Parents Protective	95	25.75	3.71	5.98
Father Critical	59	22.83		
Neither Parent Critical	163	26.24	3.41	4.15
Mother Critical	35	23.48		
Neither Parent Critical	163	26.24	2.76	2.60

*Negatively correlated with the Detached-Independent Self.

**If C.R. = 2.00, P = .05; If C.R. = 2.33, P = .02; If C.R. = 2.58, P = .01.

The statistically significant results for self-levels relative to social roles are presented in Table III. This aspect of the study is a repetition of an earlier pilot study in which similar results were obtained. No significant differences in self-level scores were found for the two age groups. In contrast, significant differences were found for males and females on all subtests. Youngest female siblings scored significantly lower on the subtest measuring the Integrative-Actualizing Self (and higher on the subtest for the Detached-Independent Self) than oldest female siblings. Oldest female siblings also scored higher on items measuring the Outer-Controlling Self (and lower on the subtest measuring the Submissive-Dependent Self) than youngest female siblings. These same findings, however, did not apply to oldest and youngest male siblings. Adolescents with no siblings scored significantly higher at the level of the Outer-Controlling Self (and lower on the subtest measuring the Submissive-Dependent Self) than those with three or more siblings. Negroes scored higher than Caucasians on the subtest measuring the Inner-Controlled Self (and lower on the negatively correlated Somatic-Primitive Self). Middle an upper closs males scored significantly higher than lower class males on items measuring the Outer-Controlling Self (and lower on the subtest measuring the Submissive-Dependent Self), while no significant differences were found for self-levels when females were classified on the basis of socio-economic status.

Evaluation and Interpretation

Since results of an analysis of test items are limited by the nature of the items selected, the self-levels used in this study cannot be considered a final list. However, an effort to minimize this limitation was made by including items representing a wide variety of theoretical viewpoints.

Measurng temperamental traits in relation to differences in self-concepts was complicated by the fact that the extent to which temperament has been modified by learning experiences is unknown. If Shirley (9) is correct in concluding from observations of children that temperament shows considerable resistance to environmental pressures, it is probable that ratings of temperament at adolescence still reflect basic temperamental qualities in spite of enhancement or diminution by social experiences.

The findings suggest that high activity levels in males are more likely to interfere with emergence of relatively more mature self-levels than in females. Emotionality also seems related in males to a lower level of self-conceptualization, but no such relationship was found for females. Possibly males more likely to respond with high emotional intensity have many unpleasant experiences in view of the tendency in our society to allow males less external expression of feelings than females. Thus these boys may tend to avoid situations in which emotions of any kind are involved. Since interpersonal relations are often charged with emotion, these persons may tend to cut themseves off from others and consequently score high at the level

TABLE III

Differences in Self-Levels Related to Ascribed Positions

(1) Description of Group	(2) N	(3) Self-Level	(4) Mean*	(5) Difference	(6) Critical Ratio**
Males	110	S_4-S_2	14.50		
Females	142		13.34	1.16	2.00
Males	110	S_5-S_1	24.17		
Females	142		27.28	3.11	3.41
Males	110	S_6-S_3	23.34		
Females	142		26.52	3.18	4.29
Negro	48	S_5-S_1	20.29		
Caucasian	48		15.75	4.54	3.69
Middle Class Males	89	S_4-S_2	17.71		
Lower Class Males	64		15.50	2.21	3.29
Upper Class Males	54	S_4-S_2	18.69		
Lower Class Males	64		15.40	3.29	4.49
Youngest Female Sibs	50	S_6-S_3	18.98		
Oldest Female Sibs	88		20.89	1.91	2.72
Youngest Female Sibs	50	S_4-S_2	15.34		
Oldest Female Sibs	88		16.90	1.56	2.29
Only Child	46	S_4-S_2	18.43		
Large Family	46		16.35	2.08	2.27

*The mean is for the first of the pair of negatively correlated self-levels indicated in Column (3). The mean would be in the opposite direction for the second self-level of the negatively correlated pair.

**If C.R. = 2.00, P = .05; If C.R. = 2.33, P = .02; If C.R. = 2.58, P = .01.

of the Detached-Independent Self and correspondingly low at the level of the Integrative-Actualizing Self.

It is difficult to explain why a relationship is found between ratings of temperament and certain self-levels for one sex but not for the other. One possibility is that when there is less variability with respect to a temperamental trait for one sex, it is difficult to obtain ratings sufficiently discriminating for accurate identification of extreme groups. Then, too, the interaction of other variables may differ for the two sexes and obscure the influence of a temperamental trait for one sex but not the other.

The findings strongly suggest that parents who are too strict, insufficiently protective, or overly critical may interfere with attainment of a mature self-concept of their children. The father's attitude, particularly when he is overly critical and highly unprotective, seems to be very significant in relation to the adolescent's level of self-conceptualization.

Ascribed social positions differ greatly with regard to the specific self-levels to which they are related and the extent of the relationship. Quite often differences in self-level found for one sex do not apply to the opposite sex. Although significant differences in self-patterns related to position in the family were found on both the pilot study and the present one, critical ratios and mean differences were not great, suggesting the presence of only slight trends with many individual exceptions.

The Negro group is likely to be highly select, typical largely of Negro families migrating during World War II from southern areas to industrial communities in California, where this study was conducted. A further study is needed using larger samples to compare Negro adolescents living in various sections of the country.

Differences in self-level seem closely related to the extent to which an ascribed position constitutes an all-or-none classification with minimal opportunity for shifts or variations in status over a period of time. The status of sex, to which self-levels were clearly related, does not recognize gradients of masculinity or feminity. Age, the one position for which no significant differences were found, is a constantly changing position and thus probably reflects differences in self-level only when more widely separated age groups are compared.

Summary

When test items representing self-concepts postulated in the theories of Erikson, Freud, Fromm, Horney, and Sarbin were intercorrelated, six patterns of self-concepts emerged and were ranked on the basis of maturity ratings by graduate students in psychology. The six self-levels, in order of increasing maturity, were: Somatic-Primitive Self, Submissive-Dependent Self, Detached-Independent Self, Outer-Controlling Self, Inner-Controlled Self, and Integrative-Actualizing Self. The study used high school students as subjects. Differences in test scores measuring these self-levels were related to differences in: (1) ratings of temperament (energy level and emotionality), (2) parent-child relationships (ratings of parental protectiveness and strictless), and (3) ascribed social roles (positions of sex, socio-economic status, race, and rank within the family constellation).

(References on page 220)

[1]A copy of the Testing Instrument has been deposited with the American Documentation Institute. Order Document No. 6612 from ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress; Washington 25, D.C., remitting in advance $1.25 for microfilm or $1.25 for photocopies. Make checks payable to: Chief, Photoduplication Service, Library of Congress.

MEET YOUR CACER -- 10

(This is the tenth of a series of biographical sketches of the members of the California Advisory Council on Educational Research.)

(When Dr. Howard Bowman was requested for "dope" about himself as the basis for a biographical sketch, he forwarded the following letter. His reply is so characteristic we are reprinting it in full.)

"I was born in Los Angeles in 1910. I attended various Los Angeles schools and the University of Southern California. They let me out in 1932, but I went back another year to get a teaching credential. The depression wasn't a good time to get a teaching job, but in 1935 I latched onto one at Antelope Valley Joint Union High School which not only included my major field of English, but also history, algebra and science.

Three years afterwards I came into the Los Angeles City Schools as an English and Sociay Studies teacher, later becoming a Junior High School Counselor. In the mean while I had acquired an M.Sc. (Ed.) from my Alma Mater, was married, and became a parent. In 1947 I was asked to do some consulting work in the Evaluation Section of the Los Angeles schools, and the following September became a supervisor in the same field. Following the retirement of Dr. Alfred Lewerenz in 1956, I became Director of the Evaluation and Research Section, obtaining my Ed. D. at about the same time.

My wife is a third-generation Californian, and our daughters are pretty well grown up. The older graduated from U.S.C. a year ago and is employed as a mathematician. The younger is a junior, majoring in psychology.

My long-time hobby is amateur radio. I have held a license since 1938 and have been active in the hobby, contributing extensively to various national and regional publications. I haven't been awarded any honors I can remember, outside the usual run of minor-league plaques; belong to various professional organizations, and for several years have acted as Chairman of a rather loosely-knit organization of people who direct testing programs in public school systems around the country."

The Use of Masculinity-Femininity Measures To Account for Sex Differences In Problem Solving

GEORGE D. YONGE

The investigation of sex differences in problem solving has recently become a topic of study in its own right, Sweeney (8). The fact that males are generally superior on certain types of problem solving tasks has been a long established fact. Ordinarily, however, the older studies have been concerned with more general aspects of problem solving, and the sex differences have been reported tangentially to the major findings (e.g., Billings (1); Guetzkow (3). More recently, Carey (2) reported an attempt to reduce sex differences in problem solving by means of educating for changes in attitudes related to (at least empirically) problem solving. Related to this study dealing with attitude and problem solving are two studies dealing with personality measures of masculinity-femininity (MF) and problem solving. Lambert (5), for example, has attempted to test the notion proposed by psychoanalytically oriented writers that arithmetic ability is a masculine trait—that high arithmetic ability on the part of females implies a masculine orientation. Although not stemming from a psychoanalytic orientation, Milton (7) has tried to show that sex differences in problem solving may be partially accounted for by differences in sex role identification (measured by scores on three MF scales).

Use of Empirically Derived MF Measures

The purpose of the present paper is to question the use of empirically derived MF measures as a means of inferring that sex differences in problem solving are attributable to a masculine orientation or to sex role identification. This is not to deny the validity of the notion that attitudes and/or sex role identifications in part underlie sex differences in problem solving performances.

George D. Yonge for the past four years has been research assistant for the Center for the Study of Higher Education, University of California, Berkeley. Mr. Yonge received his M.A. (Educational Psychology) from the University of California, Berkeley, in 1958. His Certificate of Completion for Ph.D. degree in Educational Psychology was granted in June, 1961, the degree to be awarded January, 1962.

The objection to using an *empirically* derived MF measure as a test of these notions does not appear to be tenable for the following reason. Except where homosexuals are compared with normals (e.g., Hathaway and McKinley (4), the criterion groups ordinarily used in constructing and MF test are, of course, males and females (e.g., Terman and Miles (9). To the extent that these criterion groups differ in problem solving ability, the resulting MF measure may be confounded with this variable. Of course, this may be used to support the notion that different attitudes and/or sex role identifications are related to differential problem solving performances. On the other hand, the use of such a measure in conjunction with problem solving performance leaves any positive result open to ambiguous interpretations. For example, Milton (7) found that the Terman-Miles MF correlated with problem solving within both sexes. From this and his ensuing analysis of covariance he concluded that differences in problam solving between the sexes may in part be accounted for by sex role identification. Are these correlations attributable to sex role identification or are they artifacts of the way in which this measure was constructed? Can these correlations be attributed to the fact that both the test content *and* problem solving performances are each related to sex membership? Are these correlations attributable to the test content which is related to problem solving merely because the criterion groups probably differ in problem solving ability? Perhaps these significant correlations are merely evidence for the validity of the MF measure—that it assesses sex membership which is concomitantly related to the test content *and* problem solving performance.

Specifically, the thesis of this paper is that it is possible to obtain significant MF-problem solving correlations by combining groups which differ on *both* of these variables even though the MF-problem solving correlation within any of these subgroups does not approach significance.

Experiments

In an attempt to shed some light on the possibility that MF-problem solving correlations may be artifacts attributable to concomitant group differences in attitudes and problem solving performances (analogous to what probably obtained in the original criterion groups used to develop the MF measure), MF[1] and problem solving[2] scores were analyzed for 275 University of California freshmen. This sample[3] includes 146 males and 129 females. Of these sub-

[1]The MF measure used is a 103 item personality measure empirically derived by the staff of the Center for the Study of Higher Education, University of California, Berkeley.

[2]The problem solving measure used is an eight item test scored to reward insightful, "productive" thinking. The maximum score on these eight items is 14 points.

[3]The data reported herein were collected as a part of a study of changes in college students being conducted by the Center for the Study of Higher Education, T. R. McConnell, Chairman.

jects, 62 males and 20 females are majoring in the sciences. These subjects were categorized by sex into science and non-science majors. As indicated in Tables I and II, the males score higher than the females on the MF and the problem solving measures, and, within sexes, the science majors score higher than the non-science majors on both of these measures. Further,

TABLE I

Means and Standard Deviations for the Masculinity-Femininity Meaure

		Science	*Non-Science*	*Total*
FEMALES	N	20	109	129
	$\bar{X}$	48.6	40.7	42.0
	SD	5.8	6.3	6.8
MALES	N	62	84	146
	$\bar{X}$	58.0	53.4	55.4
	SD	7.8	6.8	7.5
TOTAL	N	82	193	275
	$\bar{X}$	55.7	46.3	49.1
	SD	8.4	9.1	9.8

Significant t values **($p < .01$): All male-female comparisons; all science-non-science comparisons.**

TABLE II

Means and Standard Deviations for the Problem Solving Test

		Science	*Non-Science*	*Total*
FEMALES	N	20	109	129
	$\bar{X}$	7.8	4.8	5.3
	SD	2.6	2.7	2.9
MALES	N	62	84	146
	$\bar{X}$	8.2	6.5	7.3
	SD	2.8	2.8	2.9
TOTAL	N	82	193	275
	$\bar{X}$	8.1	5.6	6.3
	SD	2.7	2.9	3.0

All differences are significant ($p < .01$) except the science male-female comparison.

science males score significantly higher than science females on MF as do non-science males as compared to non-science females. On the problem solving measure, non-science males score higher than non-science females, but there is no statistically significant difference between science males and females on this measure.

If the correlation between MF and problem solving scores is attributable only to concomitant differences between groups on these two variables, the following results should hold:

1) The MF-problem solving correlation within each sex will be significan (owing to concomitant MF-problem solving differences between science and non-science groups within each sex);

2) The MF-problem solving correlation for the total non-science major group will be significant (owing to concomitant MF-problem solving differences between male and female non-science majors);

3) The MF-problem solving correlation for the total science group will not be significant since there is an MF difference but no corresponding problem solving difference;

4) The MF-problem solving correlation for the total sample will be significant. Table III presents the correlations for the subgroups, total groups and the total sample. It is interesting to note that even though the MF-problem solving correlation within any one subgroup (e.g., male-science, female-science, etc.) is not significant, combinations of these groups produce significant correlations which are in line with the thesis of this paper with one exception—the correlation within the male group. In this case, perhaps the concomitant differences, though statistically significant, are not large enough to produce a spurious relationship.

The largest concomitant MF-problem solving difference occurs when comparing male science majors with female non-science majors. The operation of the proposed spurious element in these correlations is illustrated by combining these groups. Within male science majors, the MF-problem solving correlation is −.10; the corresponding value within the female non-science group is +.12. Neither of these values reaches the .05 level of significance. The male MF and problem solving means are both considerably higher than the female non-science means; hence, when these groups are combined, the MF-problem solving correlation increases to a sigfinificant

TABLE III

Masculinity-Femininity-Problem Solving Correlations

	Science	*Non-Science*	*Total*
Females	— .05	+ .12	+ .23*
Males	— .10	— .16	— .03
Total	— .04	+ .20*	+ .28*

*$p < .01$

positive value of .41. An additional bit of evidence pointing to the operation of this correlation producing factor is provided by the correlation for the combined female science and male non-science groups. Here the MF mean is higher for the males whereas the problem solving mean is higher for the females. The resulting correlation is a *negative* value of .18. Both of these correlations are in line with the concomitant group differences on the MF and problem solving measures.

It cannot be denied that these results are in part influenced by the variability of scores involved in these comparisons. The problem solving variance remains relatively stable within and across groups, but the MF variance fluctuates widely—especially when both sexes are combined in any way.

Discussion of Findings

Admittedly these data cannot be considered a stringent demonstration of the thesis of this paper. As far as they go, they suggest that MF-problem solving correlations may be artifacts of the way MF measures are ordinarily constructed and of the nature of the sample with which one is dealing. The standard deviations presented in Tables I and II suggest that restricted range of scores within subgroups does not adequately account for all of the anticipated lack of relationships; unfortunately the restricted range of some groups does cloud some of the results of this study.

Milton (6) recently approached the sex-role problem solving relationship by manipulating the content of several problems to favor one sex or the other while holding the operations involved constant. For example, he couched the same problem in terms of a woman in a kitchen handling cookies and in terms of a hobo handling cigarette butts. Thus, the problem remained the same, but the *objects* involved were presumably more relevant to a feminine sex role in one instance and to a masculine sex role in the other.

Rather than use an MF measure as a means of inferring the relevance of attitudes and/or sex role identifications to problem solving performances, a more suitable course to follow appears to be an elaboration of Milton's more recent approach. Such an approach should yield results less ambiguous than when an MF measure is used alone.

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The Role, Responsibilities, and Training Of School Psychologists in Relation To Electronic Data Processing

JOHN CAFFREY

Even if the word "electronic" were omitted from the title of this paper, there might still be some confusion regarding the words "data processing" in the light of conventional concepts of the role of the school psychologist. However, it does not sound so bizarre to ask, "What is the role of the school psychologist regarding the gathering, analysis, and use of the *information* required to meet the needs of pupils for psychological and guidance services?" My first point is thus an obvious one: That most psychologists and kindred educational specialists are *already* engaged in data processing, sometimes on a vast scale. The use of high-speed, automatic, electronic devices for this processing simply implies an extension of power and a reduction of precious professional time and energy devoted to mundane, low-order clerical work.

In the following discussion, the word "psychologist" designates "school psychologist" and, in general, any specialist involved in guidance, counseling, and pupil personnel services in the schools. It is also convenient to use the term "EDP" to designate *electronic data processing* methods and equipment, including both simple accounting machines of the type familiar to most of us as "IBM machines" and the less familiar, sometimes more forbidding family of programmed *computers*, a family of which there are now several dozen members in addition to the colossus of them all, IBM.

It is also important to exclude from the detailed consideration in this discussion the problems of *operating* EDP systems and devices. In the next few years there will emerge a new professional role in education—that of Director of Educational Data Processing. This is not an operator's role.

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Machine operators and supervisors and computer programmers are technicians who in their own world may or may not be of professional calibre, but the *educator* denoted here is a newborn professional person in the educational world. He may or may not know how to operate machines or write computer programs, but he knows both the educational system *and* the nature and potentials of EDP and thus bridges the gap between the EDP technician and the director.

Among the most frustrating difficulties one encounters in discussing this general topic is rather forbidding technology of EDP and the seemingly impenetrable vocabulary involved in discussing it. When educators who have no background in EDP first sit down in conference with EDP technicians, one often has the feeling that the participants should be wearing earphones, as in the United Nations, by which simultaneous translations are available to both sides. Every special occupation develops its own jargon—which, of course, does not seem jargon to its users until the problem of communication with other specialists is encountered. Even the most seasoned EDP specialists experience some major difficulties in understanding the needs and objectives of the educator, and (at least in my experience) the educator often reacts to the language of the EDP specialists as if the latter has just debarked from a Martian saucer.

Use of EDP Methods and Systems

Those of us who have been fortunate enough to be involved in the development and use of EDP systems in educational contexts are convinced that it is just a matter of time before most major, or even moderate-sized school systems will regard the use of EDP methods and systems as commonplace, as an integral part in the array of instruments essential to effective educational systems. The day is not far off when it will seem as inconceivable that EDP should not be an accepted part of the educational scene as it would if we were to dispense with texts, maps, audio-visual devices, or even telephones, scoring machines, dictaphones, and the like. Much of the essential clerical drudgery involved in education is either so taken for granted or so artfully distributed among masses of slave laborers (e.g., teachers, counselors, and pupils) that we are not aware of the enormity of the loss of professional time and training imposed by such tasks. Typically, a counselor spends 2/5 or more of his time on clerical tasks which could better be done by EDP methods, and if we can relieve him of these tasks with the additional advantage of performing them more rapidly and efficiently, we can add significantly to the professional resources of school staffs without increasing their size. With the additional time available, the counselor and psychologist can, if nothing else, learn to *use* the information he formerly processed manually (and then filed away).

It is important to point out that EDP methods applied to educational and guidance systems not only permit us to do more rapidly and efficiently

what we used to do by hand, but also make possible development of *new* techniques and resources, new insights, and processes which would simply not be feasible under a manual system. Better and more accessible information is not *in itself* the answer to all educational problems; psychological services require a great deal more than good information. But adequate information, though it may not be *sufficient*, is certainly a *necessary* condition for effective solutions to many educational problems.

Authough psychological and related services in education need, and can profit from, better information, data processing systems can be of no greater value than our ability to exploit them. It is often observed that when counselors and teachers are first relieved of some of their former clerical jobs by EDP systems they do not at first know what to do with either the newly-freed time or the sudden rising flood of information which pours from the EDP center. One of the professional tasks of the Director of EDP, then, is to assist the educator by developing better methods of transmitting, presenting, and digesting such information, and the educator must insist that this be done.

History

It may be helpful to review briefly the history of data processing in psychological services. In the paleolithic stage, the psychologist gathered what information he could from a variety of sources. In some school systems, clerical aides are not even trusted to record test scores or semester marks in cumulative records, and counselors themselves spend their summers transcribing all such records. Since in many systems the scheduling of pupils into classes is regarded, properly, as a guidance function, the counselor may also find himself involved for several weeks or even months in the staggering logistic task of arranging pupil schedules in accordance with administrative policies and decisions about how best to deploy the resources of the school and its staff.

Now a few school systems have entered what one might call the iron age. In this period, assistance has begun to be available from elementary machines originally designed to perform accounting functions but ingeniously made to perform clerical tasks for the educator: Recording test and achievement data, making statistical summaries, posting to records, and the like. Most of us who are using EDP systems are still in this stage. That is, we are doing the best we can with equipment which was not conceived or designed to meet the needs of educators but with which we have learned to "make do."

Now we are on the brink of a new historical period in which two things are happening: We are learning something about large-scale, programmed, digital computers, with all their vastly increased resources of speed, automation, storage capacity, and integration—and their significant reduction in the *unit cost* of processing psychological and educational data. And we are beginning to think in terms of specifying the kinds of equipment and

systems we need for educational purposes. That is, we are now beginning to make sufficiently widespread use of EDP equipment to be able to go to the manufacturer (just as accountants, scientists, and military engineers have done) and say, "We want equipment with the following characteristics; we will not be content merely to make do with what you have produced to meet needs not always relevant to ours."

For example, there is now in California an Educational Data Processing Association, including professional educators and the heads of educational data processing centers, which is beginning to attack some of these problems and which is also trying to find a corporate voice for the common interests of educators in sharing the results of development and experimentation in districts which have had very little communication with one another. The summer of 1961 has seen the first of what it is hoped will be an expanding series of educational data processing workshops, designed to meet the specific needs of school psychologists, administrators, and other specialists to understand and use the resources of EDP. Those of us who have operated such workshops are convinced that there is a great need for the further development of professional training in EDP concepts and systems for educators.

I first began to realize the importance of this training when, in my own school district, I observed that EDP services were best and most effectively used by those schools in which a few professional staff members, usually guidance personnel, took a great and sympathetic interest in EDP problems and assumed responsibility for learning as much as they could about the nature and operation of the system. To put this another way: In two different schools, both ostensibly using identical EDP systems and applications, the quality of the *data center's* services was notably better in the school in which this professional interest and competence existed, even though these professional staff members had no direct part in operating the system. I will now venture to state a hypothesis which only modesty forbids me to call Caffrey's law: *The quality of the data processing services rendered by an EDP center will vary directly as a function of the understanding, interest, and sense of professional responsibility of the school staffs receiving the service.*

In the transition between what have been called the neolithic and iron ages, when EDP systems are first introduced into schools, it is a grave error to assume that one can rent or purchase machines, hire a first-rate crew of machine operators, tell them to mechanize processes previously performed manually, and expect that the resulting system will necessarily succeed. Conversely, it is even more difficult to try to make data processing technicians out of professional educators. My unquantified but so far unaltered experience has been that most professional educators, particularly school psychologists, are by some odd quirk of personality very unlikely to enjoy the kind of work involved in data processing, and this leads to many difficulties in

communications. In general, it seems difficult either to make educators out of EDP technicians or EDP specialists out of educators. For some time, as the new professional role indicated earlier develops, there will be a kind of bureaucratic marriage, with an EDP technician operating services which are professionally controlled by an educator who knows what can be done with the powerful resources of EDP equipment and systems. Each specialization in education has a role to play in determining how best to exploit these resources in the achievement of professionally defined goals.

Training and Uses for Psychologists

The questions implied by the title of this paper may be answered in two ways: First, by suggesting the kind of training school psychologists might be well given with regard to EDP systems, and, second, by portraying in a broad way the school of the future and the kinds of uses the psychologist might make of a well-designed data processing system.

With respect to EDP systems, the school psychologist should know what kinds of equipment are used or available. As long as the punched card dominates the scene, he should know something about how information is coded, recorded and transmitted by such documents, how to exploit the interesting resources of, mark-sense and portopunch cards as well as of optically scannable information-collecting documents. He should know what it is possible to do with the information available in an EDP system in order to specify realistically and reasonably the kinds of informational reports he needs or could use. He should know enough about the quality controls and error checks which are feasible in such systems in order to specify the controls he wishes to see enforced. He should know enough about the potentials of computers to demand more and better—and cheaper —informational systems. He must be able to work closely with EDP technicians in determining the contents and forms of reports and record systems; the latter task should definitely *not* be left solely to the technicians! He should be able to assist his professional colleagues in understanding the resources as well as the limitations of mechanized processing and to determine the proper division of responsibility between automated processes and those not amenable to automation. He should be able to describe what he wants and the nature of the processes he wishes to automate in terms comprehensible to the EDP technicians and programmers who are to do the work. Finally, he should know enough about the present and potential characteristics of EDP systems to conceive and demand new and better services, at higher levels of sophistication, and to support the efforts of other professionals to improve the *use* of better, more accessible data.

Future Uses

When good EDP systems have been developed to their optimum potential in the schools, the following visions may prove to be less fanciful than

may appear now. Here are some events in the yearly and daily life of the school psychologist and counselor of the near future: A pupily sits down with the counselor to discuss his plans for college, and a question arises concerning the status of the pupil's course work. On the counselor's desk sits a small viewing screen with simple controls. He keys in the student's name or file number, and immediately on the screen, visible to both, appears the pupil's cumulative record, with his grade-point average, *as of today*. At the conclusion of the interview, the counselor pencils a mark-sense card which records the data and nature of the interview, the decisions made, etc. If a schedule change is implied, this will be automatically effected. In the spring, the counselor again sits down with the student to develop a program for the nexa academic year. Before him he has a neat and readable report, prepared by a computer, which shows all the available data relevant to the task: Test data, achievement, teacher ratings and recommendations, plans, etc. The pupil's program can be designed without regard to the problem the counselor will later face of developing a conflict-free schedule for all his counselees—because a computer will later design a conflict-free schedule for the entire school and do so in a matter of minutes or hours. On another day, the counselor finds on his desk in the morning an automatically-prepared report showing the names of students whose work is falling to dangerously low levels and who perhaps may need help from the counselor—or names of students whose attendance problems have reached a point which suggests the need for counseling. Test reports, both group and individual, show not only local *and* national norms but other relevant data for each pupil—comparisons with achievement tests or academic marks or teacher ratings.

At the end of a marking period, records are updated accurately and automatically and are instantly available to the counseler. Furthermore, the counselor routinely receives automatically prepared reports of current failures or incompletes. When a parent confers with the counselor and data are required, the counselor either has at hand the latest reports from the data center or can call for the information he needs by using an electric typewriter or the display screen mentioned earlier. Attendance reports are not only available hourly, recorded by a magnetic drum system and thus immediately accessible for use by the counselor but are posted automatically to master records. Reports of achievement show cumulative grade-point averages, routinely computed during the printing of reports which are automatically addressed for mailing to parents; in addition, such reports may show these averages relative to the pupil's aspiration level—for example, how close his average comes to the one needed for entrance to college. Electronic cumulative records are referenced automatically by the computer during the processing of class and pupil schedules, all at the direction of the counselor.

If some of these visions seem fantastic, let me emphasize that all of the components necessary for the development of such systems *now* exist and

simply need to be put together properly in accordance with good educational design requirements.

The cost of an adequate system *per unit of work done* is very low. It may seem impractical, at first glance, to use a computer which rents for perhaps $7 a minute to develop an analysis of potential conflicts among student programs. But if one learns that in 4 minutes such a computer can analyze all the conflicts among all the pupils in a high school of 2000 enrollment, the cost seems very small. Entire batteries of tests can be processed, with translation to national and local norms, and with complete statistical reports and summaries, for a few pennies per pupil—and at many times the speed of manual processing.

Conclusion

Finally, there is one editorial point which must always be made in such discussions: To what extent does the counselor and psychologist surrender any of his professional prerogatives to a machine?

Computers and their accessory hardware are simply obedient morons. They do what they are instructed to do (barring rare mechanical failures), and if they are told to do something wrong they will *do* it wrong and at high speed! It is possible to design EDP systems and programs which will *effect* the decisions of the educator, but only if rules are provided.

To put it another way, automatic equipment does not *make* decisions: It carries them out. The original decisions made by the educator in a manual system, such as whether to program a pupil for a particular course at a particular ability level, are expressed in terms of rules and procedures which must be specified in great detail. Any decision which a psychologist can now make, providing he can define the nature of the decision and the process by which he arrives at it, can be effected by an automatic system. For example, when the counselor prescribes that Johnny shall be placed in a high-ability section and that he should be in a class taught by Miss Jones and should not be scheduled in the afternoon, and so on, all of these requirements can be specified in advance and effected by a computer program designed to construct the class schedule for a school.

Any administrative rule which can be *specified* can be *programmed* into an EDP system. What will always remain the prerogative of the psychologist will be to make those intuitive, inexplicable, perhaps irrational but correct decisions which he alone can make—because not even he knows or can explain precisely how he makes them. But even "feelings," if they can be expressed as requirements or plans, can be specified in some detail as to how they are to be *effected* with the aid of EDP systems.

In the broadest sense, properly used EDP systems can free the psychologist to perform his essential functions. They can assist him to perform these by supplying accurate, well-organized, accessible, integrated information

without which he cannot function as effectively—but which, by itself, is valueless unless used for well-conceived professional purposes. And one of the most interesting implications of the impact of EDP systems on education is the fact that new and better designs and objectives can be conceived precisely because the means now exist to make such designs feasible. It is well within the realm of present possibilities to remove most if not all of the mechanical limits which make it so difficult for the psychologist and educator to develop information-processing systems which conform in complexity to the nature of the human behaviors we seek to modify and enhance.

With regard to electronic data processing systems, then, our primary task, as professionals, is to know enough about EDP to make sure that automation serves rather than determines or limits our objectives—and at the same time to see the potential feasibility of new objectives inherent in the characteristics of automated systems.

Use Of Masculinity . . .

(Continued from page 206)

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The In-Service Education Needs Of New Teachers

BOB L. TAYLOR

A questionnaire follow-up study was recently conducted at San Francisco State College of the candidates who received their credentials through the professional curricula of the Secondary Education Department in 1957-58. The group included those who received the General Secondary, Special Secondary, Junior High School, and Junior College Credentials. From the original group of 264, returns were received from 218 of them—a return of 82.6 per cent.

About three-fourths (73.9 per cent) of the teachers who cooperated in the survey were planning to take additional college work, while 21.1 per cent had no plans for continued education. Only 5 per cent were undecided. More than half (55.6 per cent) had immediate plans to complete the Master's degree program, while an additional 13.7 per cent eventually wanted to work toward the doctorate. Over 30 per cent were continuing work on a credential with the administrative, pupil personnel services, and the general secondary being the most popular.

The group was asked to identify the problems most frequently encountered in their teaching. Table I reports the problems ranked according to their frequency of mention. *Excluding administrative-type problems, classroom control and motivation of students seemed to be the principal problems that these teachers were experiencing.*

The teachers were also polled with respect to the areas in which they needed additional training in order to increase their efficiency. The responses are presented in Table II, again ranked by frequency of mention.

In the list of problems identified by the teachers, *their principal problems were classroom control and motivation with lack of subject matter ranked well down on their list of problems.* Note, however, that subject matter was ranked an overwhelming first in the desire for additional training. Although this may be subject to various interpretations, on the surface there seems to be some inconsistency.

Dr. Bob L. Taylor has been Assistant Professor at San Francisco State College for the past four years. Prior to this he had 4½ years' experience in high school teaching. He obtained his Doctor of Education degree from Indiana University in 1957.

The last question in the survey instrument concerning in-service education was, *"What is your school system doing to help promote your growth in teaching competency?"* Table III provides a summary of the most frequently mentioned techniques employed by school systems. Courses for salary increment seemed to create a keen awareness of the in-service efforts of the school systems. Although one suspects that districts were offering other kinds of in-service education programs, it is interesting to note that teachers seem to be the most conscious of those related to salaries.

The following statements summarize the expressed in-service education needs of these 218 teachers:

1. Most of these teachers were planning to work for an additional degree or credential.
2. More than half of these teachers were planning to work for a Master's degree.
3. Courses for salary increments was the most common in-service effort identified by these teachers in the districts where they were teaching.

TABLE I

Teaching Problems Ranked According to Frequency of Mention

Rank	*Problem*	*Frequency*
1	Classroom control	34
2	Insufficient time for the job	21
3	Lack of student interest in school work	19
4.5	Heavy clerical responsibilities	13
4.5	Overloaded classes	13
6	Student motivation	11
7.5	Students' lack of skill in the fundamentals	10
7.5	Insufficient knowledge of methodology	10
9	Heavy extra-curricular load	9
10	Planning and preparation of lessons	8
11	Insufficient knowledge of subject field	7
13	Heterogeneous grouping	6
13	Homogeneous grouping	6
13	Inadequate supplies and equipment	6
15	Administrative policies	5

TABLE II

Areas of Needed Additional Training

Rank	*Areas*	*Frequency*
1	Subject matter in teaching field	99
2	Counseling and guidance	17
3.5	Educational psychology	15
3.5	Methods and techniques	15
5	Experience (only)	12
6	Testing and evaluation	10

TABLE III

In-Service Techniques Ranked by Frequency of Mention

Rank	*In-Service Techniques*	*Frequency*
1	In-Service courses	39
2	Required units for salary increases	36
3	Nothing	20
4	Class visitations and observations	16
5	Workshops	12
7	Faculty meetings	10
7	Administrative help and encouragement	10
7	Evaluations	10
9	Professional library provided by school	8

Quest For Educational Innovation . . .

(Continued from page 194)

knowledge, and research is a major source of knowledge by which the discords can be overcome. The immovable barrier to innovation obtains from established practice. The duty to question established practice has little support in any organized society, yet progress is frequently the product of inquiry into the established and cherished customs of a culture. Disaster, revolution, or stubborn men have been the prime movers of innovation more often than the good or kindly, considerate men. Knowledge has too long rested inert in volumes and in the minds of men—men too timid and too loyal to a heritage to raise a voice against the "tried and true."

Our public schools are no exception. Our school organization, our training of teachers, and the methods of instruction implement tradition of the past, ignoring unfolding knowledge that would update and improve. It is imperative that educators promote the expansion of educational research and vigorously apply research findings. Furthermore, assuming that we can ill afford to await the incentive of disaster to initiate changes, we humbly offer ingredients that some research supplies as a vehicle for educational innovation. There is accumulating an increasing amount of dependable knowledge which is not being implemented rapidly enough to meet the demands of the times. The search, then, is for bold men who will put this knowledge to use. The challenge is to review and revise educational practices to evolve men who will fight the battle of human survival. Determined men with the objective vision which research can provide may yet lead the human race out of its self-imposed tribulations, provided it does not exterminate itself meanwhile.

DOCTORAL DISSERTATIONS IN EDUCATION

Accepted by California Colleges and Universities, 1960-1961

This classified report of doctoral dissertations in education accepted by California colleges and universities in 1960-61 represents these six institutions: Claremont Graduate School, University of the Pacific, Stanford University, University of California at Berkeley, University of California at Los Angeles, and University of Southern California.

Each study has been classified according to the scheme below under the division where the primary subject matter appeared to fit. There are numerous cross references, most of the dissertations ebing cross-referenced one or more times. Readers should take note of the whole classification scheme before searching for particular subjects since this scheme differs from those employed in most college and university libraries.

Many of these dissertations may be borrowed from the library of the college or university by means of inter-library loan through an established library (school system, college or university, city, county, or state). However, some institutions are now making dissertations available only through microfilm copy.

CLASSIFICATION SCHEME

EDUCATION IN THE LARGER VIEW
Educational Theory and Aims
Cultural and Social Problems
History, Biography, Comparative Education
RELATED SCIENCES
Growth and Development
Educational Psychology
Educational Sociology
Educational Meaurement
LEVELS AND KINDS OF EDUCATION
Elementary Education (Incl. Kindergarten
Secondary Education (Incl. Jr. High)
Higher Education
Junior Colleges
Professional Education
Other Education (Incl. Trade & Industrial)
CURRICULUM
Curriculum in General, Extra Curricular Activities
Language Arts
Mathematics
Natural Sciences
Social Sciences
Art and Music
Physical Education, Health and Safety
Business Education
Citizenship
STUDENT DIFFERENCES
Student Welfare and Recreation
School Holding Power
Guidance
Gifted Students
Other Exceptional Children
ADMINISTRATION
Federal-State-County-District Relationships
School Finance

School Districts—Administration, Types of Organization, Boards of Education
Business Administration
Classified Personnel
School Plant
Transportation
Community School Relationships
Laws and Legislation
THE INSTRUCTIONL PROGRAM
Organization for Supervision
Principals
Standards of Performance, Evaluation
TEACHER EDUCATION
Preparation of Administrators
PERSONNEL POLICIES AND PRACTICES
General
Recruitment, Selection, Orientation
Tenure, Leaves of Absence, Retirement
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Teaching Assignment
Assessing Teacher Competence
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EDUCATION IN THE LARGER VIEW

Educational Theory and Aims

1. Roth, Dorothea Harriette. *A Study of the Immediate and Longitudinal Effects of Opposing Arguments of Educational Concepts.* U.C.L.A.

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Cultural and Social Problems

2. Reinhardt, Bruce A. *Education for Institutional Security: A Study of the Institutional Character of Adult Education in the Church.* U.C.B.

History, Biography, Comparative Education

3. Davidson, Adele K. *A History of the California Association for Adult Education.* U.C.L.A.
4. Hogin, James Edgar. *The Contributions of J. William Harris to Teacher Education.* U.O.P.
5. La Bounty, Hugh Orvice, Jr. *Edwin Augustus Lee: Portrait of an Educator.* U.C.L.A.
6. Macquire, Ruth Elizabeth. *English Commentary on the American Common School, 1860-1900.* U.C.L.A.
7. Myers, James E. *The Educational Work of Andrew Jackson Moulder in the Development of Public Education in California, 1850-1895.* U.C.B.
8. Phelan, Arthur Elisee. *The Administration of the University Elementary School of the University of California, Los Angeles, 1882-1957.* U.C.L.A.

9. Rentsch, Helen Jones. *English Comment on American Education 1900-1944.* U.C.L.A.

10. Sullivan, George D. *The Development and Present Status of the Departments of Education in the Catholic Universities and Colleges of the Archdiocese of San Francisco in California.* U.C.B.

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RELATED SCIENCES

Growth and Development

11. Ayres, Anna Jean. *Space Perception and Visualization in Cerebral Dysfunction.* U.S.C.

12. Owen, Freya Weaver. *Asthma and Maternal Stimuli.* Stanford.

Educational Psychology

13. Anderson, Leone. *The Functions of Peripheral Vision in the Reading Act.* U.C.B.

14. Baker, Robert Francis. *The Effects of Anxiety adn Stress on Gross Motor Performance.* U.C.L.A.

15. Barrett, Jean. *Identity Crisis in Atypical Adolescent Boys.* Claremont.

16. Bedford, C. Mitchell. *The Concept of the Individual in Existentialism and Its Implications for Education.* U.S.C.

17. Cratty, Bryant Jackson. *A Comparative Study of the Relationship of Learning a Fine Motor Skill to Learning a Similar Gross Motor Skill Based on Kinesthetic Cues.* U.C.L.A.

18. Fink, Martin Bertram. *Self Concept as It Relates to Academic Underachievement.* U.C.B.

19. Greening, Charles P. *Development of Meaning of Concrete Nouns from Context in Reading: An Experimental Study.* U.C.B.

20. Hubbard, Elizabeth Vickery. *An Experimental Investigation of the Phenomenology of Kinesthetic Perception in Its Relation to Certain Measures of Movement Capacity.* U.C.L.A.

21. McNaughton, Anthony H. *The Ability of Seventh-Grade Children to Infer Meaning and to Generalize From Two Selections of Written History Materials.* U.C.B.

22. Nunney, Derek Normond. *Physical Activity, Fatigue and Motor Learning.* U.C.L.A.

23. O'Connor, Robert John. *An Analysis of the Bases for the Concept of Equality.* U.S.C.

24. Richardson, Joy B. *The Differential Timing of Discrete Eye Movements of Readers Differing in Levels of Comprehension.* U.C.B.

25. Singer, Harry. *Conceptual Ability in the Substratafactor Theory of Reading.* U.C.B.

26. Wanner, Paul Walter, Jr. *Social Interaction, Independent Behavior, and Industry in Sixth Grade Classrooms.* Stanford.

27. Weichert, William Stuart. *The Problem Solving Behaviors of Two Groups of Seventh-Grade Pupils.* U.C.B.

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Educational Sociology

28. Cline, Marion Jr. *Achievement of Bilinguals in Seventh Grade by Socio-economic Levels.* U.S.C.

29. Hoyme. Richard Gjermund. *Educational Sociology — A Status Study.* U.S.C.

30. Wilson, Alan B. *The Effect of Residential Segregation Upon Educational Achievement and Aspirations.* U.C.B.

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35. Miran, Norman. *A Study of Social Adjustment as It Relates to Grade-Skipping in the Elementary School.* U.C.L.A.

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